

**Final Year Project title for Semester 2020/2021**

Please check the detail and availability of the topic of your interest with the respective supervisors.

Lecturer name	No	Topics	Synopsis	Mode	Student name (if the title has been reserved) otherwise leave it blank
Dr. Siti Harwani Md Yusoff	1	Space Farming using IoT module	"This project will begin with the study of requirements for strawberry/potato to grow in a growing room. The derived requirements will be used to study the method of planting in the space environment. The expected output of this project is the preliminary design of growing room embedded with IoT module."	Experimental	Chai Rong King
	2	"Earth magnetic field data analysis for earthquake study."	"This project required data analysis from MAGDAS system in Engineering Campus for seismic activity monitoring such as earthquake and tsunami"	Data analysis	
Assoc. Prof. Dr. Emi Abu Bakar	1	Analytical based experimental work for Non-Homogeneous and Homogeneous Material thru Non Contact Measurement Unit	Extended work of Non Destructive Evaluation for Non-Homogeneous and Homogeneous Material thru the lab scale prototype machine.	Simulation and experimental	Available
	2	Deep Learning Based Banana Plant Detection Using UAV for Smart Farming Application	Banana is the second most commonly grown fruit crop in Malaysia. Overall banana production has decreased due to the increasing threat of Fusarium wilt disease, high labour costs and marketing issues. This affects the ability of farmers to forecast and estimate the production of banana. This project proposes a deep learning (DL) based method to precisely detect and count banana plants on a farm plantation excluding other plants, using high spec RGB based aerial images collected from Unmanned Aerial Vehicle (UAV).	Programming and Simulation	Available
Ir. Dr. Husein Mamat	1	Effect of Nanoparticle Density on Water Block Performance	Throughout the research field of thermophysical properties of nanofluids, thermal conductivity of nanofluid (k <sub>nf</sub> ) and viscosity of nanofluid (μ <sub>nf</sub> ) are the most studied thermo-physical properties in the literature. Due to the wide application prospects of nanofluids, researchers are also interested in other thermophysical properties such as density of nanofluid(ρ <sub>nf</sub> ). This study to evaluate the effect of nanoparticle density on the performance water block electronic device.	Fundamental review and Experimental	Nor Nazrul
	2	Evaluation of Filtering Facepiece Respirators Using Chemical/No-Chemical Decontamination Methods	To evaluate the performance of filtering facepiece respirators (FFRs) by characterization of the aerosol penetration and filter resistance of N95 and KN95 type. The evaluation will be done after the FFRs have gone through the specific decontamination procedures.	Fundamental review and Experimental	Available: Open for student resides in Bangi, Selangor. Experimental work will take place at NIOSH
Dr. Aslina Anjang Ab Rahman	1	Post-fire Mechanical Properties of Composite Materials.	Post-fire behavior will be studied to get better understanding on the effect of fire exposure to the mechanical properties of composite specimens.	Experimental	Engku Afi Akramin Bin Engku Muhammad Naari
	2	"Durability of Bio-composite Materials Subjected to Different Environmental Conditions."	The effect of different environmental conditions will be studied on bio-composite specimens.	Experimental	Hemazjan A/L Dorasamy
Dr. Mohammad Hafizi Hafiz Bin Ishak	1	Flow Dynamics and Characterization of airborne disease transmission	The novel coronavirus disease (COVID-19) spread pattern continues to show that geographical barriers alone cannot contain a virus. Asymptomatic carriers play a critical role in the nature of this virus quickly escalating into a global pandemic. Asymptomatic carriers may transmit the virus unintentionally through sporadic sneezing. A Computational Fluid Dynamics (CFD) approach is proposed with a realistic modeling of a human sneeze achieved by the combination of state-of-the-art experimental and numerical methods. This modeling approach may be suitable for future engineering analyses aimed at reshaping public spaces and common areas, with the main objective to accurately predict the spread of aerosol and droplets that may contain pathogens	Simulation	
	2	Study on the Encapsulation of Multiple Chips Led Module Using Computational Fluid Dynamic	Nowadays, the demand of LED (light emitting diode) has increased sharply owing to its advantages over the fluorescent light bulb and incandescent light bulb. LED is a power saving, long life time and environment friendly device. Besides, it is small in size and easy to control. In this study, A Computational Fluid Dynamics (CFD) approach is used to predict the thermal performance of LED during the design phase. This would help the designer in designing LED modules which has high luminous light output and good heat dissipation ability	Simulation	
Dr. Ahmad Zulfaz bin Mohamed Kassim	1	A numerical investigation on the aerodynamics of vertical-axis turbines (SUBTOPIC 1: depending on student's interest to be discussed later)	The aerodynamics of vertical-axis turbines will be investigated and analyzed numerically using an industry-standard specialized software named Qblade with applications in wind and hydrokinetic turbines. A few subtopics are available: 1) effects of unsteady aerodynamics, 2) contributions of aerodynamic forces on turbine performance, 3) parametric effects on turbine	Simulation	Aaron Basil Raj
	2	A numerical investigation on the aerodynamics of vertical-axis turbines (SUBTOPIC 2: depending on student's interest to be discussed later)		Simulation	Goh Su Teng
Assoc. Prof. Ir. Ts. Dr. Pienahy Rajendran	1	Global Path Planning	Please check the details with supervisor	Simulation	Abdul Anis Aqil Bin Abd Wahab
	2	Obstacles Detection and Avoidance	Please check the detail with supervisor	Simulation	Yunnesiah Yusudewi
Ir. Dr. Faizul Hawary	1	Design and control 2-DOF Flight simulator	To design a controller to stabilize 2-DOF flight simulator platform. It involve Matlab, Arduino and C coding with some sensors such as encoders, IMU to be able to integrate with the platform for closed loop feedback system. The structure has been completed, but the student needs to equip the actuator and driver to interface with the flight software.	Simulation and experimental	Muhammad haq
	2	To design a controller to stabilize a platform using variable pitch propeller	A balance platform with a brushless motor mounted with variable pitch propeller. The student needs to design a controller + sensor to stabilize the platform using PID, LQR controller. And the performance of both controller will be compared.	Simulation and experimental	Ali Inran bin Zamree
Dr. Noorfazreena M. Kamaruddin	1	Experimental Investigation on the Flow Structure of a Hybrid Turbine Blade for Hydrokinetic Application	Please contact directly for further details	Experiment	Nurul Aisykin Abu Bakar
	2	Experimental Investigation on the Power Performance of a Hybrid Turbine Blade for Hydrokinetic Application		Experiment	Available
PE Dr. Halim Kadarman	1	Stress and Strength Analysis of Ultralight Aircraft Fuselage	Simulation using FEM software. Hand calculations and fabrication at the workshop	Simulation & Fabrication	Muhammad Isa
	2	Stress and Strength Analysis of Ultralight Aircraft Wing	Simulation using FEM software. Hand calculations and fabrication at the workshop	Simulation & Fabrication	Hussan
Dr. Zhou Ye	1	Multi-agent Reinforcement Learning for Swarm Robots Formation	This project aims to investigate intelligent, self-learning formation control of swarm robots with Reinforcement Learning. This project involves Matlab, Arduino, and C/C++ programming.	Simulation and experimental	Available
	2	Deep Reinforcement Learning for control	Deep reinforcement learning combines the advances in deep learning for learning feature representations with reinforcement learning. This project aims to investigate the learning efficiency in continuous control tasks. This project involves Python programming.	Simulation	Available
Dr. 'Aiffah Mohd Ali	1	Design and fabrication of a tracking system using APDS protocol	This project is to design, fabricate and test the tracking system using Automatic Packet Reporting System (APRS) which is an amateur radio-based system for real-time digital communications of information about everything going on in the local area.	Fabrication	Muhammad Izz Zharfan bin Ashar Muzafar
	2	Analysis of ionospheric effects on Ground-Based Augmentation System (GBAS) at Kuala Lumpur	This project will analyze the effects of ionospheric scintillation on the Ground-Based Augmentation System (GBAS) at Kuala Lumpur.	Data analysis & simulation	Amira Nur'izzah Zamzuri
Dr. Ho Hann Woei	1	Egomotion Estimation and Control of MAVs	To be discussed with the student	Experimental	Tan Shu Chuan
	2	Indoor Localization and Navigation of MAVs	To be discussed with the student	Experimental	Ching Poh Ling
Dr. Norlizi Amilia Ismail	1	Balloon Calculator and Performance analysis	"This project is to design the GUI for balloon and gas requirements for High Altitude Platform system. The works consist of - Study on balloon requirements and parameters • Develop GUI • Experiment on balloon performance (balloon launch and analysis) "	Simulation and Experimental	
	2	Development of CanSat Teaching and Learning Module	"This is the cross-disciplinary projects where students need to apply their knowledge in engineering"	Simulation and Experimental	
Dr. Mohd Shukur Zainol Abidin	1	Tensile, compression and flexural properties of natural fibre composites manufactured via vacuum assisted double bagging method	This work will examine the mechanical properties of natural fibre composites namely on the tensile, compression and flexural properties.	Experimental	
	2	Mode I fracture toughness of palm and coir fibre reinforced composites via double cantilever beam test	Double cantilever beam test will be performed on natural fibre composite laminate in accordance with ASTM D5045-10.	Experimental	
Dr. Chang Wei Shyang	1	Numerical parametric study of cavitation effect on 3D hydrokinetic turbine blades	The student will work on the simulations via ANSYS Fluent of different hydrokinetic turbine blades under various operating conditions.	Simulation	Nagarajan A/L Nanthakumar Kawendar
	2	Parametric study on aerodynamic performance of UAV winglet designs	The student will simulate different types of winglet designs for UAV (low Reynolds number) via XFLR5.	Simulation	Hariprathak Kumar
Dr. Norizam	1	Development of a mechanical fish robot prototype with 3 different tail planforms	Develop a mechanical fish robot prototype with 3 different tail planforms.	Experiment	Sharvin Raj
	2	Evaluation of the mechanisms for inducing leading edge vortex	Evaluate the mechanism of inducing Leading Edge Vortex	Simulation	
Dr. Pooya	1	Study on the process parameters involved in multi-walled carbon nanotube production for aviation	"To synthesize multi-walled carbon nanotubes (MWCNT) using chemical vapor deposition method"	Experimental	Available
	2	An investigation on the synthesis and electromechanical properties of flexible 3D graphene composite	"To develop 3D graphene foam using chemical vapor deposition method to investigate mechanical and electrical properties"	Experimental	Available
Assoc. Prof. Dr. Farzad Ismail	1	CFD simulation of micro hydro-kinetic turbine.	"Please contact the supervisor"	Simulation	Available
	2	Aerodynamics Optimization of MALE UAV	"Please contact the supervisor"	Simulation	Available
Dr. Sarjit Singh Sidhu Junior	1	Fluid-Structure Interaction (FSI) studies of MALE UAV using various materials	"Please contact the supervisor"	Simulation	Available
	2	Surface roughness effects under turbulent supersonic flow conditions (subtopic 1)	Please contact supervisor directly for details.	Simulation	Lim Wei Fong
Dr. Nurul Masrifah Mazlan	1	Surface roughness effects under turbulent supersonic flow conditions (subtopic 2)		Simulation	Lee Kah Kheng
	2	Engine Performance Simulation using Gas Turbine Simulation Program	This topic requires student to learn on how to use Gas Turbine Simulation Program (GSP) to evaluate engine performance.	Simulation	Hafiza Najmi
Dr. Nurul Masrifah Mazlan	1	Analysis on the Influence of Combustion Hot Gases on Combustor casing	In this study, student will use ANSYS Fluent to evaluate combustion characteristics which involve	Simulation	Lim Ban Ab